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University of Toronto

COMPUTER SCIENCE NEWSLETTER

No. 86

Date March 30, 1972

Edited by C. A. Ford

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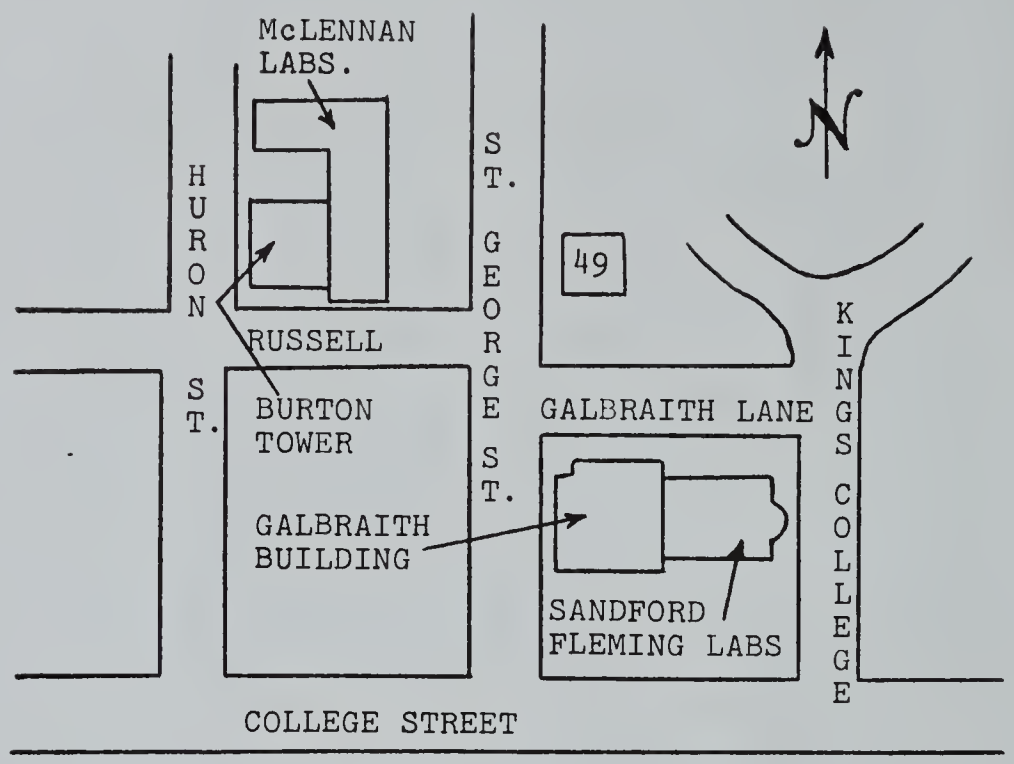
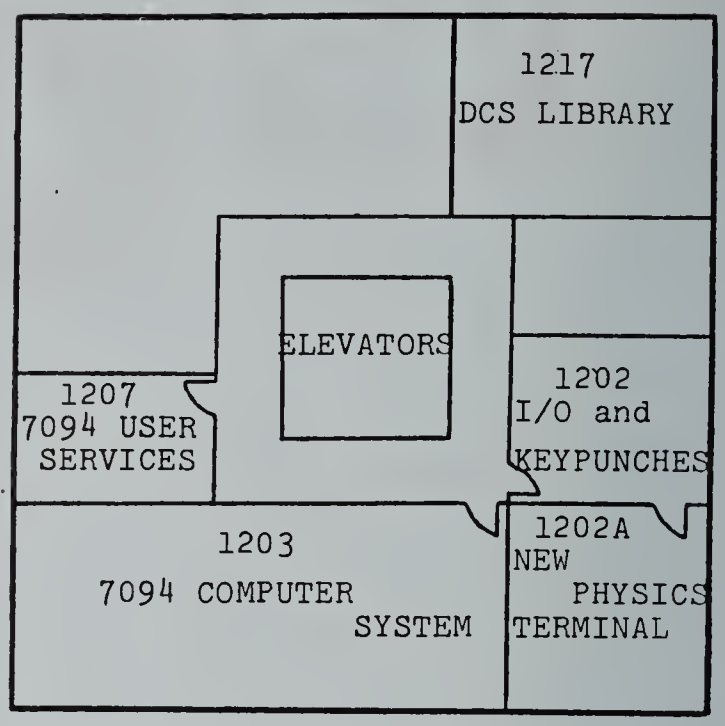
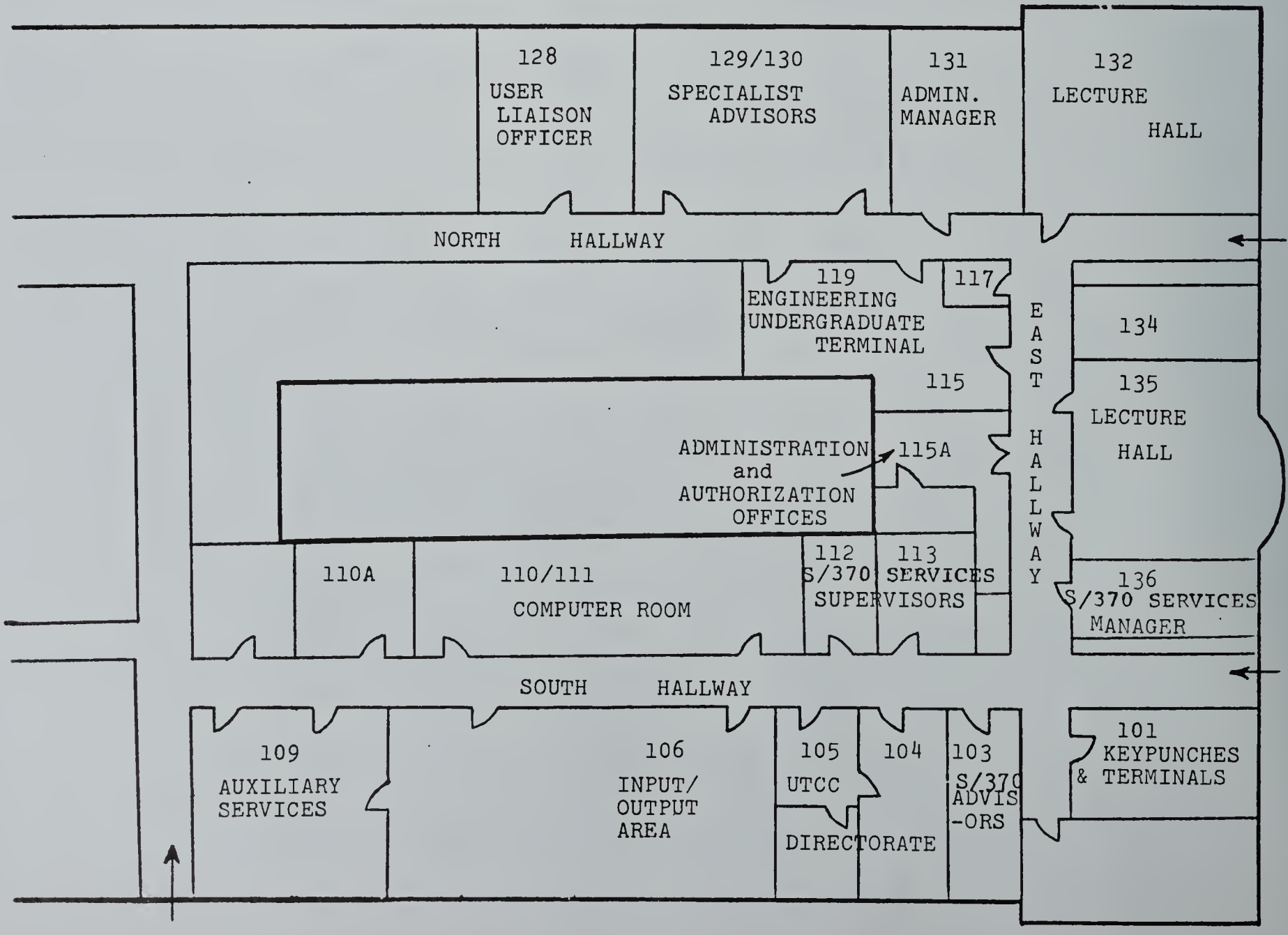




FLOOR PLAN: 12th FLOOR BURTON TOWER

FLOOR PLAN: UNIVERSITY OF TORONTO COMPUTER CENTRE
SANDFORD FLEMING LABORATORIES



SUGGESTIONS

Janet Marsh

The number of suggestions received this month increased to 30, as compared to only 26 last month. These suggestions are broken down into the following general categories: technical issues (9), Computer Centre policies (5), equipment and Physical Plant ideas (6), general job handling procedures (4), publications (3) and miscellaneous (3). Some of these are quoted and discussed below.

Suggestion: "I have always found the three-part format of job cards a bother. Why not have two-part job cards?"

Reply: Two-part job cards are being designed right now and will be available in May.

Suggestion: "How about suppressing printing of the authorization code and check digit on output listings?"

Reply: The printing of the check digit was a bug which has been corrected. Removal of the authorization code from the printout is in work soon to be completed.

Suggestion: "Users' reserved boxes should be where users can obtain the contents themselves."

Reply: Steps are being taken to provide users with a more easily accessible storage filing system. A degree of security will be lost when these shelves become more accessible.

Suggestion: "Faster turnaround on the HASP terminals. I submitted a job on priority 4, and later, a job on priority 8. Due to a slow response in tearing the paper off the printer, I got the priority 4 job back before the priority 8 job."

Reply: I/O operators have been made aware of this inequality of service. In future, printers will be cleared and output bursted in order. Printer 1 will be cleared and programs bursted first, Printer 2 second, and so on. The only time when this rule will not be followed, of course, is when one of the printers is producing a larger than usual output file.

SYMPOSIUM ON COMPUTER-COMMUNICATIONS NETWORKS AND TELETRAFFIC

From Press Release

"Computer-Communications Networks and Teletraffic" is the twenty-second annual international symposium organized by the Microwave Research Institute of the Polytechnic Institute of Brooklyn. It will be held April 4-6, 1972 at the Hotel Commodore in New York City. This symposium has been organized with the participation of the Communications Society and the Computer Society of the Institute of Electrical and Electronics Engineers with the Communications Society as a co-sponsor. This symposium is also co-sponsored by the Air Force Office of Scientific Research, the Office of Naval Research and the Office of Army Research.

One of the primary objectives of the symposium is to attempt to place in perspective the fundamental theories associated with the study of computer-communications networks and teletraffic. Applications of these theories to the analysis and design of message-switching networks, store and forward systems, communication nets and traffic models will be among the main themes of the symposium.

The symposium is organized into a series of fourteen consecutive sessions. The opening session features a keynote paper on Computer-Communications Networks and Policy, by Dr. George Mansur, Deputy Director of the Office of Telecommunications of the Executive Office of the President. A total of 59 papers and a panel discussion are included in the program, with 17 of the contributions from Canada, Finland, France, Germany, Italy and the Soviet Union.

The Guest Speaker at the Banquet on Tuesday evening, April 4, 1972 will be Dr. Howard Frank, talking on "The Science Fiction Computer" and how society's views of the promise and the threat of computers is reflected by science fiction writers.

The program has been developed under the direction of Professors R. R. Boorstyn and R. L. Pickholtz. The proceedings of the Symposium will be published by the Polytechnic Press as Volume XXII of the MRI symposia series.

Please address all inquiries about the program, registration and the "Proceedings" to:

Polytechnic Institute of Brooklyn
MRI Symposium Committee
333 Jay Street
Brooklyn, New York 11201
Attention: Jerome Fox, Executive Secretary
(telephone: (212) 643-2393)

DOCUMENTATION STANDARDS UNDER DEVELOPMENT

Joyce Walton

The Canadian Standards Association, whose CSA seal of approval is required by law for products involving safety, also engages in standards activities of a more voluntary and less rigid nature. CSA acts as Canada's representative within international standards organizations, and as an agency for the creation and publication of Canadian standards.

In the data processing field, the Sectional Committee on Information Processing co-ordinates the work of several Committees and Sub-Committees dealing with a diversity of hardware and software subjects. All of these committees are composed of volunteers from various segments of the Canadian computing industry, with the CSA providing a Secretariat as well as liaison with international groups. In the process of creating a Canadian standard, several cycles of circulation, balloting, and revision occur, seeking to ensure that the standard is as widely acceptable as possible.

The CSA Committee of Problem Definition and Systems Analysis has a Working Group on Information Processing Documentation whose current project is defining the elements of documentation necessary for a system (and/or a single program) after it has been implemented and throughout its productive life span. This group has prepared an outline of their project which they would like to circulate to as many interested people in the field as possible for comment on their approach.

If you would like to participate in this reviewing process, or would simply like to be kept informed of the direction this standard's development is taking, please write or phone for a copy of the outline to:

Mr. H. Z. Rogers
Canadian Standards Association
178 Rexdale Boulevard
Rexdale, Ontario
(telephone: (416) 743-5200)

COMPUTER-AIDED STRUCTURAL ANALYSIS AND DESIGN WORKSHOPS

From Press Release

TROY, N. Y. -- A workshop in Computer-Aided Structural Analysis and Design will be offered at Rensselaer Polytechnic Institute, in co-operation with local sections of ASCE and ASME, June 19 to 21, 1972.

The workshop is intended to familiarize practicing engineers, engineering executives, and educators with the latest developments in general structural analysis and design. It will review basic operations of Matrix algebra, give essential background in matrix and finite element analysis of structures, introduce the ICES - STRUDL - TABLE problem-oriented languages, and most importantly, give participants an opportunity to interact with the computer system by working on their own or on practical problems to be provided.

For additional information, please contact the Office of Continuing Studies at RPI.

PERSONNEL CHANGES J. Schick

During the last month, there have been a number of personnel changes at the Computer Centre.

Mrs. Razia Aziz, Miss Delia Quintieri and Mr. Leo Chu have left User Services for employment elsewhere.

Mrs. Carol Tomcheski has left the I/O after a short stay. New on staff is Rein Mikkor who joins the System Assurance group.

Mrs. Angela Evdoxiadis has transferred to another department in the University. Mrs. Glenna Ayerst replaces her as Secretary for the Administration section.

SHARE ACTIVITIES OF UTCC STAFF MEMBERS C. A. Ford

Five members of the staff of UTCC attended SHARE XXXVIII in San Francisco during the week of March 6 to March 10. Mr. Sam Goldfarb represented the Interactive Systems of the Centre, while John Boddy, Russ Mayhew and Eileen Friedman covered OS, HASP and other systems projects. Your reporter, as manager of the Product Evaluation Project, chaired or presented papers in four project sessions as well as sharing in the work of other projects in the Management Division of SHARE.

SHARE XXXIX will be held here in Toronto in August. Mr. Larry Moore, Director of the Ryerson Computer Centre, will be in charge of local arrangements. Jerry Palter and Ann Herring of UTCC are undertaking committee duties for the August sessions.

NEWS FROM THE DEPARTMENT OF COMPUTER SCIENCE Corley Phillips

Secondary School Teachers Symposia

The first Saturday symposium held March 11 was most successful. Professors John Lipson, Ric Holt and Sheldon Glasser gave excellent talks. Comments from the teachers present indicated that they enjoyed and benefitted from the day's activities.

"Games Computers Play" will be the theme of the second Saturday symposium to be held April 18. Professors D. Corneil and Z. Vranesic will be the speakers. The game of NIM and its representation in the computer will be presented. Some graph theory will be used to explain the mathematical analyses of NIM-like games, the theory of game playing, and the strategy of winning (or losing). More complex games such as chess and checkers, which cannot be completely analysed, will follow. Consideration will be given to the heuristics necessary in writing programs to play chess and checkers. A chess match between Professor Vranesic and Greenblatt's program will close the day's session.

Anyone interested in Computer Science or Data Processing at the high school level is cordially invited to attend.

Advanced Course on Software Engineering

The Mathematical Institute of the Technical University in Munich, Germany was the site for a series of lectures on Software Engineering during the week of February 21 to 25, 1972. Professors Denis Tsichritzis and C. C. Gotlieb of the Department of Computer Science were among the ten invited lecturers. Dr. Gotlieb spoke on ""Performance Measurement" and Dr. Tsichritzis gave lectures on "Reliability" and "Project Management".

Colloquia in April

The Department of Computer Science cordially invites all interested persons to the weekly colloquia held on Mondays

at 3:45, Room 203, McLennan Physics. The three colloquia scheduled for April are:

April 3: "Computer Cartography", Professor Thomas V. Peucher, Department of Geography, Simon Fraser University.

April 10: "Abstract Animation by Computer", Lillian Schwartz, Bell Telephone labs, Murray Hill, New Jersey.

April 18: "A Mathematical Approach to Computer Language Semantics", Professor Dana Scott, Department of Philosophy, Princeton University.

Administrative Terminal System

The ATS facility available on the interactive terminals is being used by three of the secretaries in the Department. Margaret Chepely is a long-time user and recently typed an entire book on the system. Vicki Shum and Pat Tims have just begun using ATS. They learned from the self-instructional booklet. It is hoped that a great deal of paperwork can be avoided in the preparation of technical reports, papers, and student records.

THE DEPARTMENT OF COMPUTER SCIENCE LIBRARY

Recent Acquisitions

Annual Review in Automatic Programming, v. 6

Boot, T. L.
Digital Networks and Computer Systems
New York, Wiley, 1971

Campbell, G. M.
FORTRAN IV with WATFIV: A First Course in Programming

Canadian Information Processing Society
Canadian Computer Census, 1971

Conference on Data Systems Languages (CODASYL), COBOL Committee
CODASYL Journal of Development, 1970
Ottawa, Canadian Government Specifications Board, 1971

Evans, D. J., ed.
Software 70
London, Transcripta Books, 1970

Head, R. V.
A Guide to Packaged Systems
New York, Wiley-Interscience, 1971

IBM
PL/I-FORMAC Symbolic Mathematics Interpreter, 1970

IFIP-TC4 Working Conference on Information Processing of Medical Records, Lyon, 1970
Information Processing of Medical Records, ed. by J. Anderson and J. M. Forsythe
Amsterdam, North-Holland, 1970

Procedures ALGOL en Analyse Numerique. 2nd ed.
Paris, Editions du Centre National de la Recherche Scientifique, 1970

Salton, G., ed.
The SMART Retrieval System: Experiments in Automatic Document Processing
Englewood Cliffs, N. J., Prentice-Hall, 1971

Symposium on Symbolic and Algebraic Manipulation, 2d, Los Angeles, 1971
Proceedings, ed. by S. R. Petrick
New York ACM, 1971

The Department of Computer Science is now exchanging technical reports with the Department of Electrical Engineering, New York University (Bronx). Selected titles include:

Feder, Jerome,
Linguistic Specification and Analysis of Classes of Line Patterns

Knollman, D. J. H.,
Simulation Sequences for Discrete-time Systems with Interactive Processes

Meltzer, J.,
Computer Animation: A Literature Survey

Morse, S. P.,
Generalized Computer Techniques for the Solution of Contour-map Problems

Rabinowitz, A. D.,
GRAPHPAK II: Perspective Projection and Plotting Program

Rabinowitz, A. D.,
Reconstruction of Polyhedra from Sets of Their Perspective Projections

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PRODUCTION STATISTICS

Jennifer Schick

The production statistics indicate very little change in the jobs run on all systems from January to February. Table II, however, continues to show the increase in production from 1971 to 1972 on all systems except the 7094. However, computer time actually used on the 7094 rose dramatically because of the increasingly long jobs which were processed for the Consortium members. See page 20 for details.

SYSTEM	DEC '71	JAN '72	FEB '72	FEB/JAN CHANGE
GPJS S/370 - '71 S/370 - '72	18,280	26,743	25,861	- 3%
7094	726	922	916	- 1%
HSJS	109,899	104,748	105,267	+1/2%
TOTAL	128,905	132,367	132,044	-1/3%

TABLE I: Jobs Run - December '71, January, February '72

SYSTEM	FEB '71	FEB '72	1971/1972 CHANGE
GPJS S/360 - '71 S/370 - '72	16,444	25,861	+ 57%
7094	1,042	916	- 12%
HSJS	65,888	105,267	+ 60%
TOTAL	83,374	132,044	+ 58%

TABLE: Comparison of Jobs Run February '71 vs February '72

CREDIT REQUESTS FOR FEBRUARY

Herb Kugel

The number of requests continued to be quite small last month, about .06%. Our major problems were in software with print buffer difficulties.

The following requests were processed:

	FEBRUARY			JANUARY
	S/370	7094	TOTAL	TOTAL
HUMAN	1	0	1	11
SOFTWARE	4	0	4	13
HARDWARE	2	0	2	8
TOTAL	7	0	7	42
% OF JOBS RUN			.06%	.11%

SYSTEM STATUS BULLETINS ISSUED

Janet Marsh

12:72:1 Bugs in SPSS Version 3 Subprogram FACTOR
12:72:2 Bugs in SPSS Subprogram CROSSTABS
13:72:1 Self-service Night Batch Processing
14:72:1 SPITBOL Version 2.2 Available
15:72:1 Arts and Science Self-service
16:72:1 Assembler G Release 2.5

OVERALL SERVICE FACTOR

C. A. Ford

Last month's Newsletter displayed three plots which illustrated relationships between the use of the different priority levels and the rate of processing of jobs. The Overall Service Factor was defined as the ratio of job costs, priority factors included, to job costs had only PR=6 (ASAP) been used for the workload. During the final weeks of S/360 service it was seen that the Factor rose steadily as the job volume increased, with marked relief shown to have occurred after the S/370 was installed.

These plots are repeated below for the first ten weeks of S/370 service. The job volume has been increasing rapidly (Fig. II) and yet the Factor (Fig. I) has not responded in the expected manner (Fig. III).

Continuing efforts at system tuning by our Operations and Development staff have succeeded in making the still-new machine cope so gracefully with the spring load. On one record day 2662 jobs, many of them using SPITBOL, were recorded.

On an around-the-clock basis there remains a very large processing reserve, in contrast to the heavy pressure during peak daylight hours. Heavier utilization of dark hours plus further tuning and equipment additions will carry the service to still higher production peaks in the future.

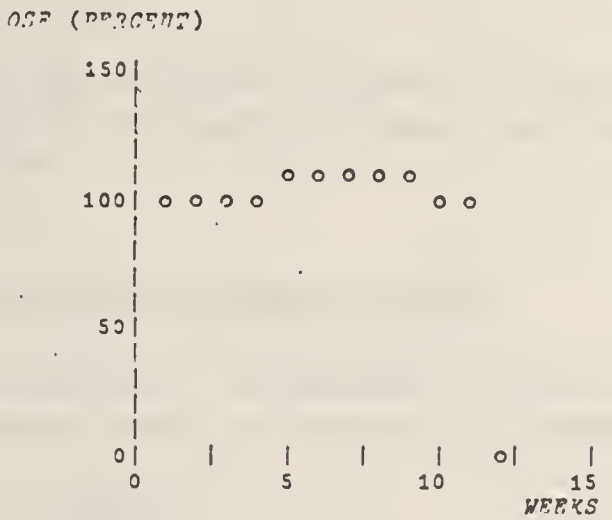

FIGURE I

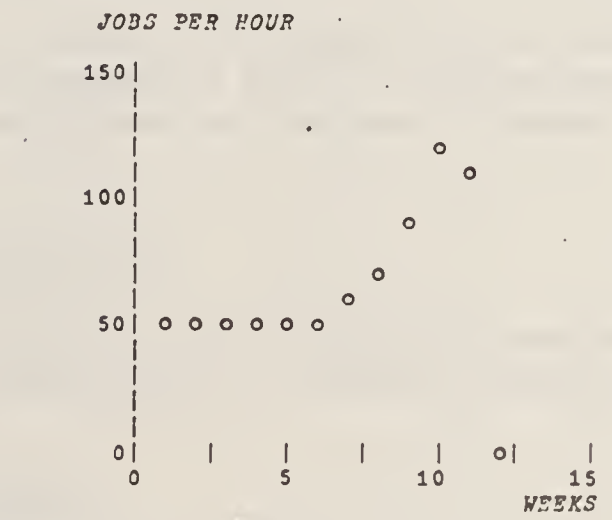

FIGURE II

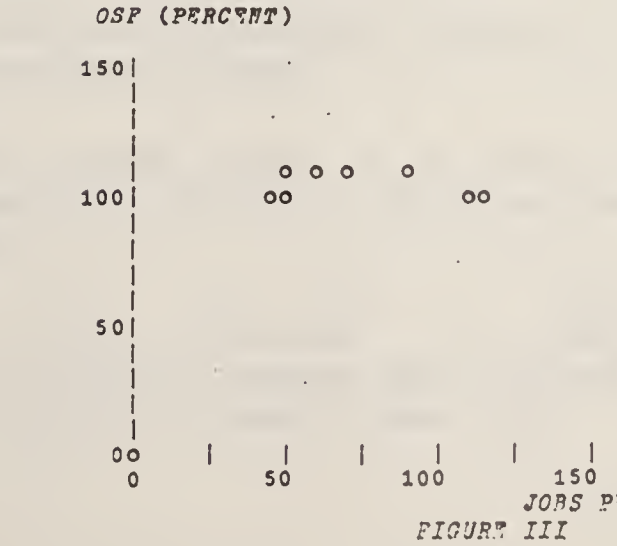

FIGURE III

SYSTEM RELIABILITY

Roy Finlayson

The system reliability for the month of February on the S/370 is shown in the following table. The figures for January are included for comparison:

	MONTH	UPTIME	MTBF
Local & Remote	January	93.5%	4.6 hours
GPJS	February	95.7%	5.1 hours

Both uptime and MTBF improved slightly from the previous month. Major problems during the month were hardware channel errors.

S/370 APPLICATIONS SOFTWARE SUPPORT

William Hayes

The following activities related to applications software support were undertaken in February:

MATH/SCIENCE:

- testing of Argonne Matrix Package version 2.0 in co-operation with I. Farkas and C. Crawford of the Department of Computer Science

ENGINEERING:

- installation of GPSS/360 version 1.3
- installation of MPS/360 version 2.10

GRAPHICS:

- purchase of CALCOMP Functional Software Package.

The last noted item is a set of routines useful in various scientific, business, drafting and general plotting applications.

Users with questions or suggestions regarding applications software support may contact William Hayes at 928-7437, (Sandford Fleming, Room 130).

STATISTICS ON CATALOGUED PROCEDURE USAGE

Stan Yagi

Statistics have been accumulated on the activity of many of the commonly used procedures and statistical libraries during the month of February. The total usage of standard language processors is tabled as follows:

PROCESSOR USAGE

Language	Number of Jobs	Percentage
FORTRAN G	8168	65.4
PL/I	2310	18.5
ASSEMBLER (G & H)	1151	9.2
FORTRAN H	356	2.9
COBOL U	158	1.3
OTHERS	338	2.7
	12481	100.0

February's figures show generally a pattern of relative usage of language processors similar to that reported in previous months. COBOL U jobs, which accounted for 3.5% of jobs submitted in January, have decreased to 1.3% this month; however, this represents a decrease of about 80 jobs over the last month, which can be attributed in part to a decrease in activity involving conversion from COBOL F to COBOL U.

It is interesting to note that FORTRAN users continue to follow the COMPILE, LINK-EDIT and GO procedures rather than use the loader by approximately 4:1. FORTRAN users are reminded that the use of the loader can result in cost savings in many cases.

Use of the FORTRAN Load and Go

Procedures are described in the Users' Reference Manual, Chapter 5, Page 11. Further information may be obtained from the advisor in SF, Room 103, telephone 928-8599.

A breakdown of the usage of the more common processor procedures follows.

Procedure Usage

Procedure	Number of Jobs	Percentage
FORTGCLG	4148	32.5
FORTGLDG	1003	7.9
FORTGCL	114	0.9
FORTGLG	228	1.8
FORSGCLG	1000	7.8
FORSGLDG	219	1.8
FORTHCLG	111	0.9
FORSHCLG	44	0.4
FORTCALG	1309	10.3
FORTCALL	70	0.6
PLILFCLG	582	4.6
PLILLDGO	1461	11.5
ASMFCLG	364	2.9
ASMFCL	66	
ASMGCLG	367	2.9
ASMGCL	54	0.5
COBUCLG	136	1.1
OTHERS	1205	9.5
INCORRECT NAMES	265	2.1
	12746	100.0

Statistical Libraries

Program	Number of Jobs	Percentage
BMD02R	205	10.6
BMDX82	40	2.1
BMD05R	27	1.4
BMD02D	24	1.2
BMD03R	20	1.0
OTHER BMD	238	12.3
TOTAL BMD	527	27.3
SPSS	1344	69.7
DATATEXT	30	1.6
INCORRECT NAMES	27	1.4
	1928	100.0

Statistical library activity has increased to 220% of the February figure, partly attributed to retesting of the BMD routines following their accidental destruction on February 14.

SYSTEM RELIABILITY

Nick Trufyn

The following table summarizes the time lost out of scheduled hours of production for the period February 1, through February 29, 1972. The total number of scheduled hours of operation during this period was 473.5. There were no late starts (IPLs). The table shows the time lost due to system failures for each of the systems: four unscheduled IPLs were required as a result of the failures. The total losses represent 0.12%, 0.11% and 2.44% of the scheduled time for APL, ATS and CPS respectively. The uptime for each of APL, ATS and CPS was 99.88%, 99.89% and 96.56% respectively.

SYSTEM	DATE	TOTAL DOWN TIME	REASON
APL	Wed. Feb. 2	7 min.	Power failure
	Thurs. Feb. 10	7 min.	LCS failure (hardware)
	Wed. Feb. 16	5 min.	CPU storage check (hardware)
	Tues. Feb. 22	11 min.	Channel error (hardware)
	Tues. Feb. 29	5 min.	Disk errors (hardware)
ATS	Wed. Feb. 2	8 min.	as above
	Thurs. Feb. 10	8 min.	as above
	Wed. Feb. 16	6 min.	as above
	Thurs. Feb. 17	3 min.	IOS program check (software)
	Tues. Feb. 22	6 min.	as above
CPS	Wed. Feb. 2	9 min.	as above
	Tues. Feb. 8	5 min.	Disk errors (hardware)
	Thurs. Feb. 10	4 hrs. 12 min.	LCS unit down (hardware)
	Fri. Feb. 11	4 hrs. 30 min.	LCS unit down (hardware)
	Wed. Feb. 16	2 hrs. 38 min.	as above plus LCS unavailable (hardware)
	Tues. Feb. 22	8 min.	as above

SYSTEM FAILURES: FEBRUARY 1 TO FEBRUARY 29, 1972

WOULD YOU LIKE YOUR OWN IBM 2741 TERMINAL?

Many people are expressing interest in obtaining their own IBM 2741 Terminal. The terminals cost $105.00 per month (minimum of two months) plus the telephone charges, and operate on standard 15 Amp. outlets. If you are using APL, CPS or ATS on the S/360, or CRJE on the S/370 and would like the convienence of doing so from your office or your home, Mr. Jerry Palter, Administration Manager for the UTCC will make the arrangements for you.

More detailed information or help with special situations can be obtained by contacting the UTCC Liaison Office (928-2694).

PRODUCTION STATISTICS FOR THE HIGH SPEED JOB STREAM J. Lees

The accompanying histograms show the total number of programs run through the High Speed Job Stream during the month of February, as well as a breakdown of those jobs between EUT and ASUT.

Recall that the types of jobs are WATFIV (W), ALGOL W (G), PL/C (C), PLUTO (P), ASMG (A), and SIMON (S). The L denotes the new listing facility implemented on the High Speed Job Stream service during the past month.

W	G	C	P	A	S	L	TOT	TIME
80	5	1	2	5	0	1	39	8+W
228	32	16	14	31	9	8	429	
724	24	25	61	71	23	2	930	
972	37	29	59	112	29	13	1293	
1050	36	30	60	130	28	8	1292	9+
939	35	45	79	153	48	12	1761	
1067	50	45	92	154	37	13	1453	
1372	74	42	114	241	60	16	1809	
1374	49	52	91	174	34	36	1815	10+
1330	27	34	80	123	15	23	1692	
1544	26	42	96	129	26	23	1886	
1648	26	33	130	136	36	15	2124	
1666	41	60	115	187	27	15	2111	11+
1773	63	55	54	142	27	29	2143	
1939	56	69	65	186	25	15	2355	
2079	81	79	92	153	21	9	2523	
2047	89	67	58	236	28	16	2541	12+
1967	74	66	32	181	29	12	2351	
2081	91	56	114	226	27	14	2589	
2089	65	65	123	195	22	21	2586	
2137	83	70	153	229	43	22	2737	13+
2151	59	67	164	217	53	16	2747	
2277	76	94	181	258	46	18	2946	
2247	79	69	163	234	36	10	2937	
2117	89	58	110	221	51	19	2665	14+
1981	64	77	69	188	43	11	2429	
2017	74	43	59	167	48	20	2437	
2034	63	63	46	172	23	42	2443	
1938	55	63	66	134	43	40	2336	15+
2170	75	82	135	192	63	18	2705	
2079	71	67	93	192	43	13	2549	
2135	75	91	88	211	42	16	2657	
2052	75	85	75	216	48	26	2567	16+
2191	74	49	77	224	53	38	2605	
2179	78	56	108	253	53	33	2766	
1935	104	55	82	228	16	26	2556	
1349	52	45	102	159	15	17	1737	17+
1217	46	65	101	166	14	18	1607	
1266	36	58	138	202	13	14	1697	
1252	30	42	97	143	14	20	1598	
1192	34	38	66	126	16	12	1498	18+
1072	36	48	98	125	12	9	1398	
963	37	32	59	136	4	6	1171	
1037	40	40	43	139	13	20	1332	
949	36	35	42	134	19	5	1220	19+
901	37	24	32	121	11	2	1138	
1013	30	42	34	119	22	9	1277	
1059	40	49	32	134	29	6	1340	
1027	31	38	52	132	27	21	1328	20+
1065	22	47	28	125	21	7	1355	
1145	26	65	26	125	24	5	1416	
1084	33	25	36	105	22	10	1315	
976	28	23	42	134	29	5	1235	21+
1023	35	41	28	114	30	2	1273	
1158	39	41	21	151	31	14	1465	
1045	61	41	19	189	34	6	1305	
83448	2954	2826	4294	9082	1621	887	105109	22+ 0 400 800 1200 1600 2000 2400 2800

FUT JOB SUMMARY ********** FOR 81-292272

W	G	C	P	A	S	L	TOT	TIME
68	2	1	2	4	0	1	76	8+0
223	10	11	14	15	0	0	283	
558	21	14	51	40	0	2	686	
666	36	23	48	54	0	2	929	
604	29	22	60	91	0	4	810	9+
544	29	33	79	96	1	4	796	
671	20	29	91	94	0	4	988	
856	54	31	110	160	2	8	1221	
833	37	32	88	81	0	20	1141	10+
834	16	29	79	53	1	13	1025	
870	16	35	95	49	6	22	1097	
980	15	27	130	42	3	7	1204	
974	35	43	115	57	4	7	1235	11+
982	52	51	54	43	3	18	1203	
1164	47	50	61	67	2	6	1397	
1332	67	57	90	67	3	7	1623	
1338	74	54	56	95	1	10	1628	12+
1219	61	54	90	61	1	7	1483	
1337	65	45	124	94	2	7	1654	
1333	40	55	123	83	2	7	1652	
1371	61	53	146	109	2	9	1751	13+
1389	45	65	153	105	1	9	1772	
1465	61	67	176	107	0	7	1983	
1533	57	51	163	120	1	9	1934	
1270	73	45	110	94	2	11	1605	14+
1060	46	57	69	75	2	4	1322	
1121	57	33	58	68	2	14	1353	
1115	43	52	45	72	1	32	1360	
1105	45	43	66	75	1	26	1356	15+
1215	61	56	90	83	1	12	1527	
1133	52	41	80	35	0	7	1407	
1160	59	53	97	123	5	10	1516	
1182	56	59	69	106	1	11	1494	16+
1176	56	40	70	111	2	13	1468	
1238	62	49	92	144	4	14	1609	
1164	91	47	92	111	2	25	1527	
810	43	36	90	103	3	12	1156	17+
746	45	33	98	103	5	14	1139	
769	30	38	101	114	5	10	1267	
768	26	28	95	99	2	17	1235	
702	24	30	60	76	4	11	977	18+
606	20	39	82	66	2	8	823	
532	19	24	47	76	1	6	705	
574	27	29	36	93	1	18	778	
540	22	29	31	86	8	5	721	19+
543	21	20	25	77	0	2	697	
621	26	29	26	69	11	7	789	
650	26	37	25	81	2	6	827	
602	26	22	40	63	2	17	772	20+
676	29	25	26	52	1	7	826	
632	20	55	24	57	6	5	799	
662	25	21	34	49	6	7	803	
568	27	19	37	67	2	4	724	21+
555	27	32	20	61	6	2	703	
626	31	37	24	81	8	8	815	
579	50	32	17	109	3	6	786	
49849	2221	2137	4022	4511	136	536	63572	22+

0 400 800 1200 1600 2000 2400 2800

ASUT JOB SUMMARY ********** ********** FRI 11-29-72

W	G	C	P	A	S	L	TOT	TIME
11	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	12	9+
94	22	5	0	16	0	8	145	|WW
162	3	10	10	31	23	6	239	|WWWW
353	44	5	11	56	22	11	452	|WWWWWWWWGA
307	7	6	6	36	4	3	357	9+WWWWWW
267	6	10	0	36	4	8	331	|WWWWW
320	29	11	1	53	27	9	459	|WWWWWWWA
423	16	0	4	70	4	7	532	|WWWWWWWWA
375	12	18	3	79	5	14	506	10+WWWWWWWA
447	0	3	1	53	4	7	517	|WWWWWWWA
517	9	10	0	62	5	0	603	|WWWWWWWWWWA
534	0	4	0	63	3	6	619	|WWWWWWWWWA
491	3	16	0	99	4	6	619	11+WWWWWWWWA
628	7	4	0	85	3	10	737	|WWWWWWWWWWWWA
621	7	19	4	94	2	5	752	|WWWWWWWWWWWWA
633	11	20	2	84	2	1	753	|WWWWWWWWWWWWWA
648	8	11	2	131	0	6	766	12+WWWWWWWWWWWWA
577	8	8	2	110	0	4	709	|WWWWWWWWWWWA
627	8	9	0	114	1	6	765	|WWWWWWWWWWWA
645	10	7	0	103	0	11	771	|WWWWWWWWWWWWA
532	14	11	7	94	1	6	665	13+WWWWWWWWWA
615	11	19	6	91	1	6	749	|WWWWWWWWWWWA
666	10	11	5	127	0	4	831	|WWWWWWWWWWWWA
627	13	13	0	107	2	1	763	|WWWWWWWWWWWWA
666	11	10	0	97	3	6	793	14+WWWWWWWWWA
737	16	15	0	87	1	2	858	|WWWWWWWWWWWWA
732	15	5	1	77	3	12	845	|WWWWWWWWWWWWA
735	15	7	1	72	7	4	841	|WWWWWWWWWWWWA
726	7	17	0	47	5	7	709	15+WWWWWWWWWA
763	0	21	6	93	4	4	930	|WWWWWWWWWWWA
787	13	24	4	95	6	6	925	|WWWWWWWWWWWA
853	12	24	1	71	4	2	917	|WWWWWWWWWWWA
713	17	22	6	91	5	8	852	16+WWWWWWWWWA
751	17	7	7	111	6	23	912	|WWWWWWWWWWWA
749	14	6	10	95	7	17	897	|WWWWWWWWWWWA
706	12	7	0	114	10	4	853	|WWWWWWWWWWWA
487	9	7	3	54	12	4	576	17+WWWWWWWWA
440	6	12	3	63	9	2	544	|WWWWWWWWWA
474	6	20	7	88	8	3	636	|WWWWWWWWWWA
462	4	14	2	54	12	3	551	|WWWWWWWWA
481	10	8	6	58	12	9	566	18+WWWWWWWA
451	16	9	6	59	10	0	551	|WWWWWWWWA
360	10	8	12	54	3	0	455	|WWWWWWWA
456	13	11	7	46	11	1	529	|WWWWWWWWA
303	14	6	11	47	0	0	480	19+WWWWWWWA
349	16	5	7	42	8	0	426	|WWWWWWWA
394	13	13	8	40	11	2	480	|WWWWWWWA
397	14	12	7	53	17	0	570	|WWWWWWWA
415	5	16	12	69	20	3	543	20+WWWWWWWA
414	3	12	2	73	12	0	516	|WWWWWWWA
408	6	10	2	68	7	0	501	|WWWWWWWWA
416	8	4	2	57	9	2	488	|WWWWWWWA
288	1	4	3	66	12	0	474	21+WWWWWWWA
443	8	9	2	53	18	0	539	|WWWWWWWWWA
516	8	4	7	69	15	6	625	|WWWWWWWWWA
454	11	0	2	80	24	0	590	|WWWWWWWWWA
29552	623	597	211	4097	427	262	34689	22+ 0 400 800 1200 1600 2000 2400 2800

7094 PRODUCTIVITY

Joyce Walton

Consortium usage, characterized by very long processing jobs with little input/output, continued to dominate the 7094 statistics. There was virtually no change from January in the number of jobs processed, but there was a slight drop in processing time and I/O.

	FEB '72	JAN '72	CHANGE FEB/JAN	FEB '71	CHANGE '72/'71
Number of jobs Consortium	916 68%	909 70%	0%	1,042	- 11%
Processing Minutes Consortium	12,154 90%	13,545 92%	-10%	3,782	+221%
I/O Thousands Consortium	1,890 77%	2,002 80%	- 6%	n/a	
I/O per Job	2,090	2,200 unit records			
I/O per processing minute	155	148 unit records			

FORTRAN BUG - NAMED COMMON

Joyce Walton

The 7094 FORTRAN IV compiler does not always allocate space correctly for blocks of named COMMON which are of different sizes (although same name) in different sub-programs. To be certain of sufficient allocation, the largest list for any block of named COMMON should appear physically first in the deck. To be doubly certain, so that deck order won't matter, it is safest to make all COMMON blocks with the same name of equal length.

CHANGES TO CRF JOB ACCOUNTING

J. R. McBride

As promised some time ago, CRF has implemented Input/Output charging on the System 360/44 under MFT. This, together with one or two other changes,was introduced on Monday, February 21, 1972. Full details of these changes and their effect on rates, etc. are contained in "Revised Schedule of Charges for 1971/72" and "The CRF Accounting Algorithm," copies of which are available from Miss King in the CRF Office, Room 2740, Sandford Fleming Labs. In summary, the changes were as follows:

A. All jobs are now charged for input/output accesses at the rate of 0.00085 research units (0.0213 cents) per access;

B. Class L jobs are now charged in the same way as all other jobs; that is, they will no longer be charged on elapsed time;

C. Interactive jobs (currently GRAPHICS and RADDT) are now charged at the normal MFT rate, plus an interactive surcharge of 100 units per "interactive hour" for the jobs step(s) using the interactive device. "Interactive time" is defined as elapsed time minus CPU time. The new interactive charge is billed automatically whenever an interactive device is used, thus relieving the user of the bother of special codes on his JOB Card.

The effect of these changes proved to be almost identical to that predicted by our Accounting Simulation; that is, the cost of the "average" job dropped by about 15%. For CPU-bound jobs the saving was greater than 15%. Some heavy I/O jobs experienced an increase in cost, and for some, which were I/O bound, the increase was dramatic. However, the reverse was true for CPU-bound jobs; they experienced a dramatic drop in price.

The cost of graphics and RADDT (real time) jobs dropped with the new method of charging, but the cost of Class L (extra large) jobs remained approximately the same.

The overall effect of these changes was to make computing less expensive and input/output more expensive. However, the net effect to the average user was a saving of about 15%.

GENERAL NEWS

J. R. McBride

A. Output Separator

In the past, CRF has had a one-page output separator on the front of user's jobs. This created the necessity of folding the top page on one-half of the jobs, so that the JOBNAME would be visible. This created extra work for the operators, and looked rather messy for finalized listings.

In late February, we introduced a modified output separator which is always printed on the top page of a listing. This was done by having the printer recognize paper pages in groups of two, so that it became possible to select the correct page of the page pair. Since only the output separator uses this page pair facility, the remainder of the printout looks completely normal. The result is a nice neat listing and a saving in paper.

B. O/S MFT II, Release 20.6

CRF will be changing to O/S MFT II, release 20.6 on Monday, March 20, 1972. Testing, including a free day on March 8, has shown that this release is superior to the release 20.0 currently being used.

The actual SYSGEN was done as a result of a CRF User Seminar on "Generating Operating Systems."

C. Out and About

In February, the CRF Manager, J. R. McBride, gave a seminar to the Department of Mechanical Engineering on the subject, "The Computer as a Research Tool." The talk was slanted to the needs of Mechanical Engineers, and emphasized the equipment and services available at the University of Toronto.

In early March, J. R. McBride attended SHARE XXXVIII in San Francisco, where he participated in the 360/44 project.

UTCC DIRECTORY

	ROOM	PHONE 928-
DIRECTOR		
John C. Wilson	SF105	6496
ASSISTANT DIRECTOR		
C. Alan Ford	SF105	2991
TECHNICAL EDITOR		
Janet Marsh	SF128	6131
USER LIAISON OFFICER		
Bill Greene	SF128	2694
ADMINISTRATION MANAGER		
Jerry Palter	SF131	8948
AUTHORIZATION CLERKS		
M. A. Rankin	SF115A	8702
Cathy Pidcock	49 St. Geo.	8703
S/370 SERVICES		
MANAGER		
Dave McNaughton	SF136	6281
INPUT/OUTPUT SERVICES SUPERVISOR		
Alan Jones	SF112	7092
USER SERVICES SUPERVISOR		
Stan Yagi	SF112	7331
PROGRAM ADVISORS	SF103	8599
INTERACTIVE TERMINAL SYSTEMS MANAGER		
Sam Goldfarb	49 St. Geo.	3787
7094 MANAGER		
Joyce Walton	BT 1207	7094
DEVELOPMENT MANAGER		
Alan Wickens	49 St. Geo.	6135

- -

JOB STATUS QUERIES:	
SYSTEM/370	7373
7094	7094
Auxiliary Services	6465
INTERACTIVE TERMINAL SYSTEMS:	
System Status	6234
APL	7200
ATS	7100
CPS	6200

UTCC COMPUTER EQUIPMENT

(a) SYSTEM/370 MODEL 165

- located in SF 106/110/111
- provides General Purpose Job Stream and High Speed Job Stream services
- 2048K bytes of core
- 16 disk drives
- 1 drum
- 6 magnetic tape drives (4 9-track and 2 7-track)
- 6 display consoles
- 5 printers
- 4 card readers
- 2 card punches
- 6 remote terminals
- 1 paper tape reader
- OS/MVT with HASP

(b) SYSTEM/360 MODEL 65

- located in Room 333 McLennan Physical Laboratories
- provides Interactive Systems service
- 1536K bytes of core
- 8 disk drives
- 2 9-track magnetic tape drives
- 1 printer
- 1 card reader
- 1 card punch
- 70 2741 typewriter terminals
- OS/MVT with CPS, ATS, and APL

(c) 7094 II

- located in Room 1203 Burton Tower
- 32K words of core
- 1 disk
- 8 magnetic tape drives
- input/output via a 1401 computer

UTCC AUXILIARY EQUIPMENT

- located in SF Room 109
- System/360 Model 20 for unit record services
- CALCOMP plotter (11" and 30")
- card sorter
- decollator
- 519 reproducing punch

COMPUTER CENTRE
UNIVERSITY OF TORONTO
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